Rescue Treatment for Tarnished Plant Bug in Sugarbeet

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Introduction

Tarnished Plant Bug (*Lygus spp)* populations have reached damaging levels in sugarbeet twice in the past three years. Often called the "Lygus bug" (from its scientific name, *Lygus lineolaris)* Lygus bugs are actually a complex of several species in the *Lygus* genus. Lygus bugs have piercing/sucking mouthparts and pre-digest plant juices by injecting saliva. This saliva liquifies and plant tissue and may have some toxic effects. Feeding injury in sugarbeets is usually restricted to new leaves and petioles and symptoms include curling and wilting leaves, tumor-like feeding scars on petioles, and blackening of the new growth in the crown. Injury often causes the plant to respond by using carbohydrate reserves to produce new leaves and stems. Unfortunately, this occurs at a time of the season when these reserves should be building up and can result in a reduction of sugar produced by the beet. Both adult and immature (nymphal) stages of TPB are capable of causing injury to the plant.

Although Lygus is present in sugarbeet most years, populations usually do not require chemical control. Consequently, there is little information available on pesticide efficacy or thresholds for this insect in sugarbeet. In August of 2001, moderate to heavy populations of Lygus were reported from a number of locations in the Red River Valley, prompting a limited trial on pesticide efficacy at the University of Minnesota Northwest Research & Outreach Center (NWROC) in Crookston.

Methods & Materials

We evaluated three insecticides at approximately ½ and full label rates (Table 1). Each treatment was replicated 4 times. Plots were 8'x20' and were staked out of an existing commercial sugarbeet field prepared with standard production methods. Pre and postcounts (48 h post-treatment) of lygus numbers were made in each plot and the treatment efficacy was assessed by calculating the percentage of the lygus population

Product	Rate (Product/ac)
Lorsban 4E	0.5 pt/ac
Lorsban 4E	1.0 pt/ac
Asana 0.66EC	0.48 fl.oz./ac
Asana 0.66EC	0.58 fl.oz./ac
Asana 0.66EC	9.6 fl.oz./ac
Malathion 57EC	1.5 pt/ac
Malathion 57EC	2.0 pt/ac

killed by each treatment. All treatments were applied on Aug 19, 2001, two treatments were originally applied Aug 17 and reapplied on Aug 19 (see Important Note below). To maximize canopy penetration, product was applied with Tee-Jet 8002 nozzles with 20g water/ac at 100PSI.

Important Note – On the original scheduled application day (Aug 17, 2001) immediately after all replications of both Lorsban treatments had been completed, the area was hit by a brief, but heavy precipitation. This did not affect any of the other treatments as they had yet to be applied. Due to Lorsban's water solubility, and the lack of available testing plots, it was decided to reapply Lorsban with the other treatments 2 days later. This incident may have a significant effect on the interpretation of the Lorsban results in this trial.

There are two potential effects. Lorsban is water soluble and may have been washed away by the precipitation. In fact, an examination of the plants in the Lorsban plots just after the rain event indicated an absence of insecticide (leaves were neither sticky nor oily). However, there may still have been significant contact mortality, especially of Lygus nymphs. If this were the case, the greatest impact would be on any residual activity of the insecticide. On the other hand, if significant amounts of Lorsban remained after the precipitation, then retreating 48 hrs later would have the effect of increasing residual mortality. Initial contact mortality, especially of nymphs, would not probably be affected as there would not have been sufficient time for re-infestation of the previously treated plants.

Results & Discussion

The data indicate that there is no significant difference between the high rates of any of the insecticides (Fig. 1). Both rates of Lorsban, both rates of Malathion and the high rate of Asana all provided good control of lygus populations, killing over 88% of the population. What is important to note is that the lower rates of Asana killed a significantly lower proportion of the lygus population than the other products and rates. In fact the lower rates of Asana were not significantly different than the untreated control. It is interesting to note that the untreated control population decreased by 50% over the 48 hour period as well. While there could have been some mortality from the water application, this is more likely to represent adults leaving the plots. These data agreed with anecdotal information from other sugarbeet fields on the NWROC treated for lygus; higher rates of Asana applied in our commercial fields were effective while lower rates did not provide sufficient control. Analyses on yield data is ongoing.

At the time of testing none of the tested products had an explicit registration for sugarbeet root maggot on their labels but all are legal to apply in sugarbeets. This means that the company assumes no responsibility for product failure when these products are used against lygus in sugarbeets.

It should be remembered that this is a one location, one time experiment. It is unfortunate we were not able to conduct a single application of both rates of Lorsban 4EC. These trials should be repeated to provide stronger data to support future treatment decisions. Because this insect tends to be a pest in sugarbeet late in the season, treatment decisions must also consider Pre Harvest Interval, which varies on all of these products.

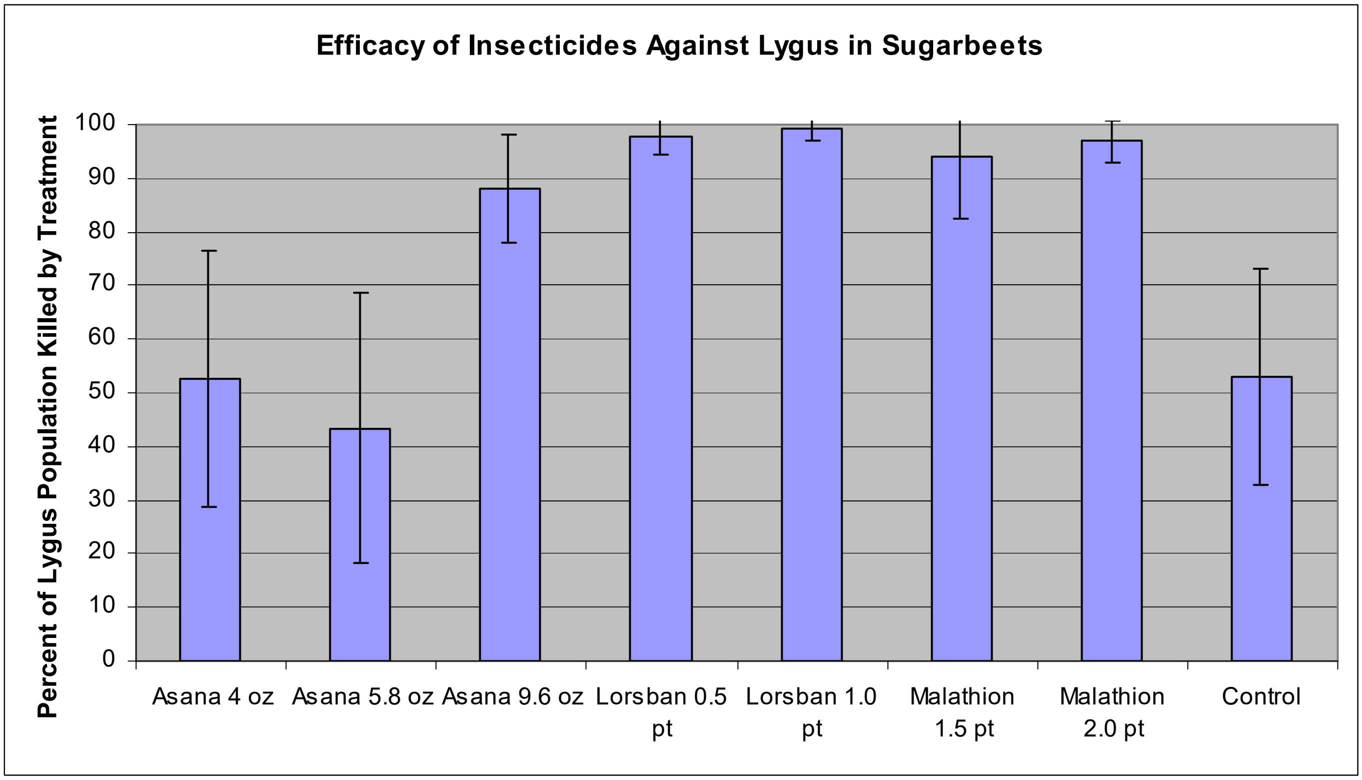

Figure 1. Results of insecticide application against Lygus bug in sugarbeet. Vertical lines are 95% CI's.